# Water Portfolio

## Overview

September 24, 2007 Statewide Water Analysis Network Workshop

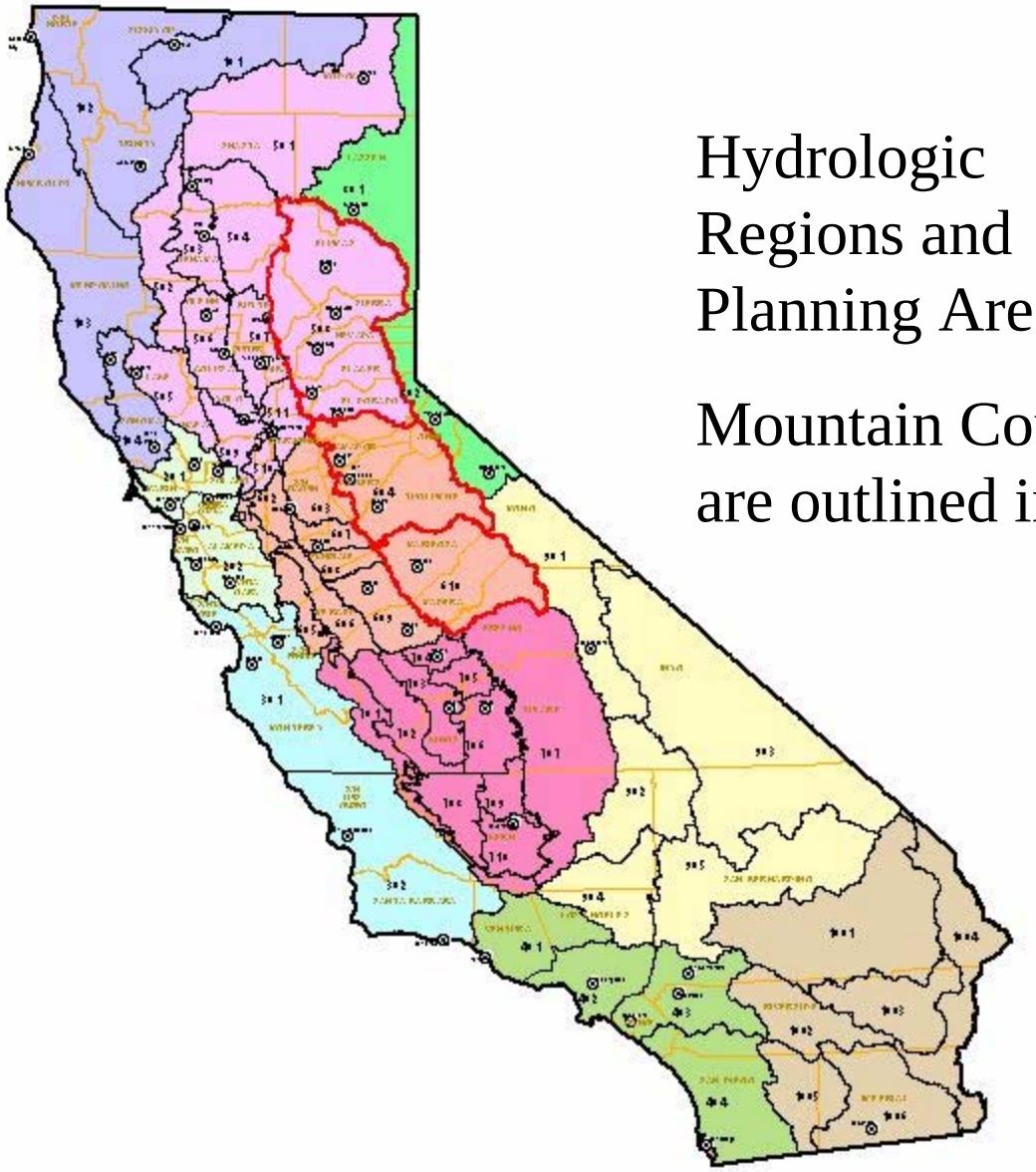
# Water Portfolio Elements

- Flow Diagram
- Flow Diagram (Table Format)
- Dedicated Water Supply Balances
- Regional Summaries

# Definitions

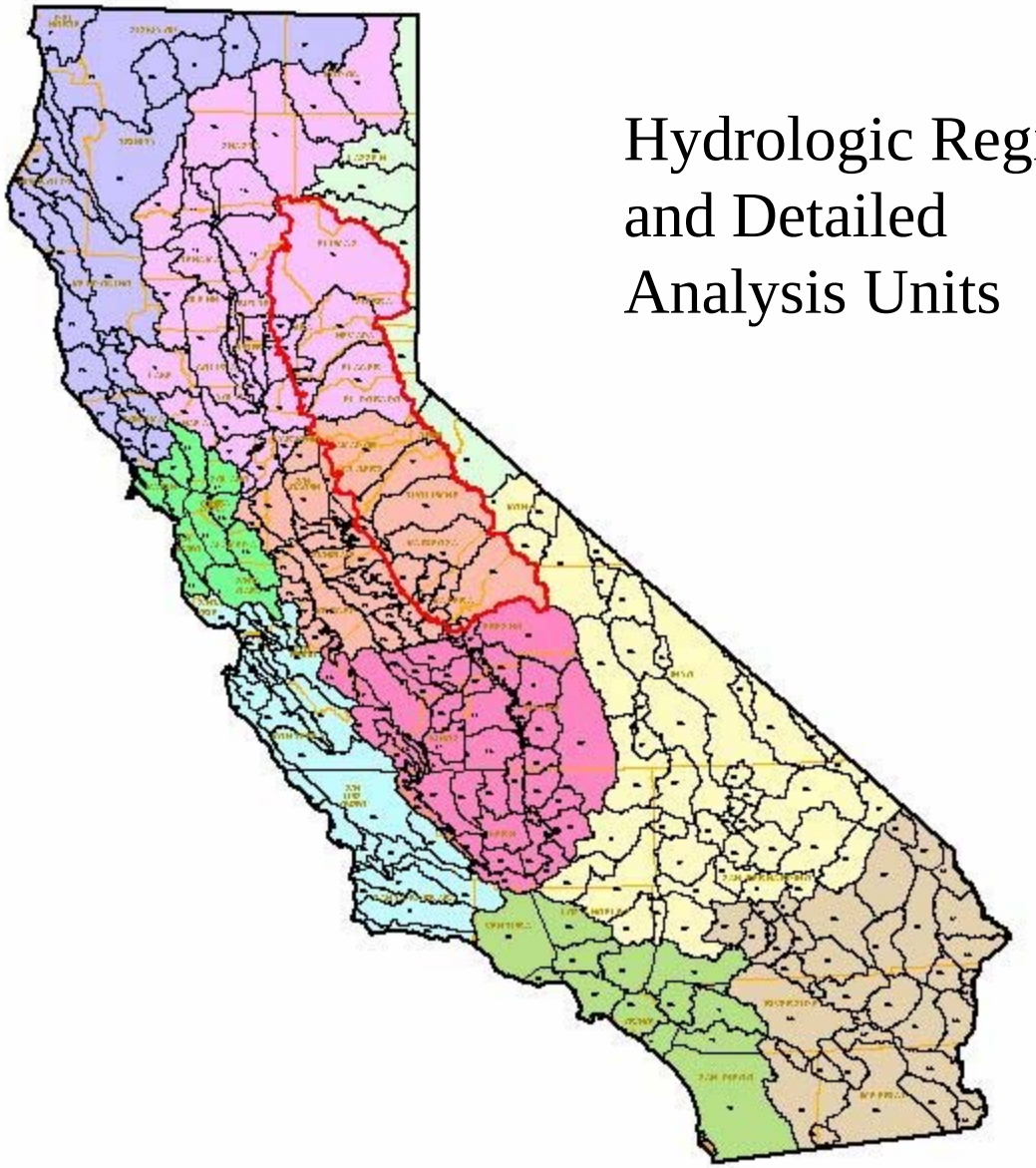
- Lists of definitions are included on the website –

http://www.waterplan.water.ca.gov/docs/cwpu2005/vol3/vol3glossary.pdf



Hydrologic Regions and Planning Areas

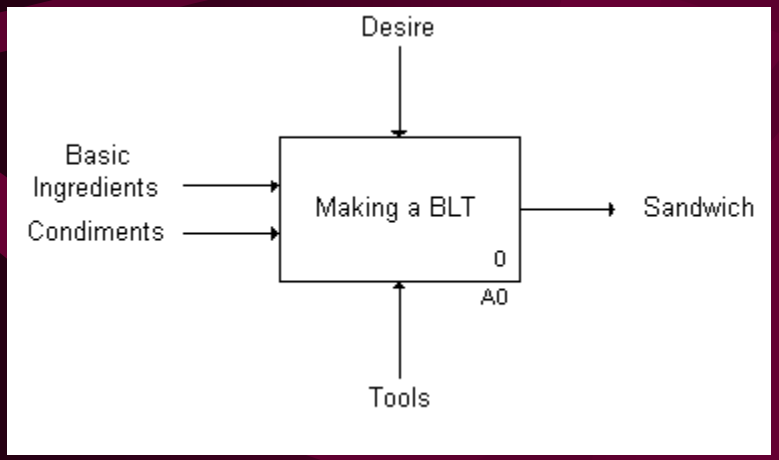
Mountain Counties are outlined in red

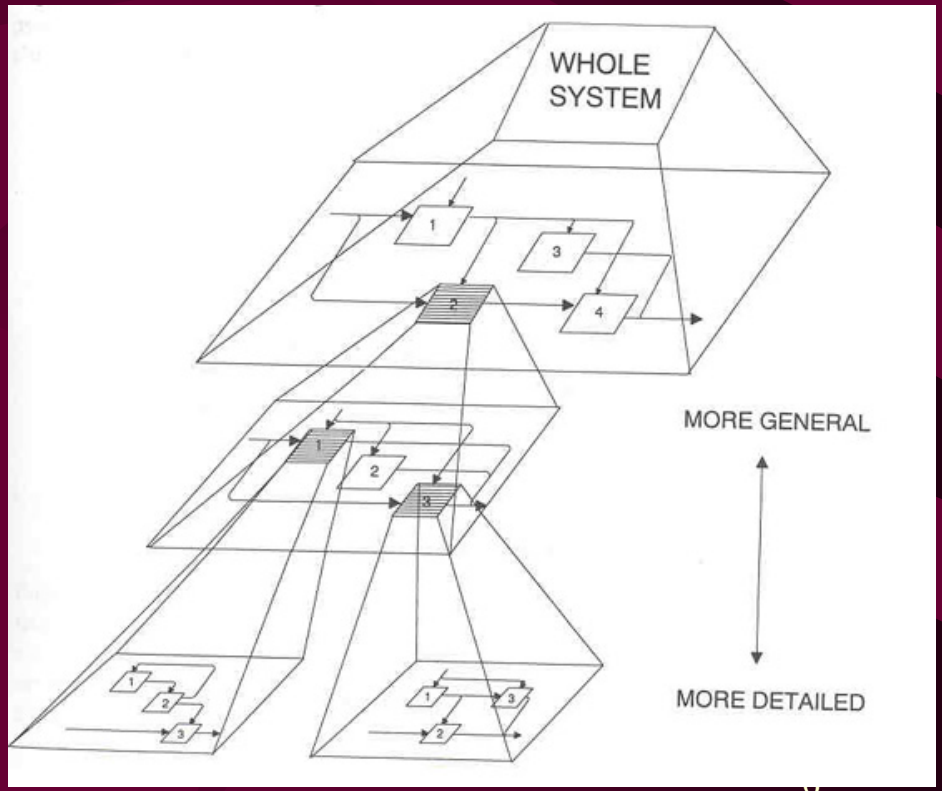


Hydrologic Regions and Detailed Analysis Units

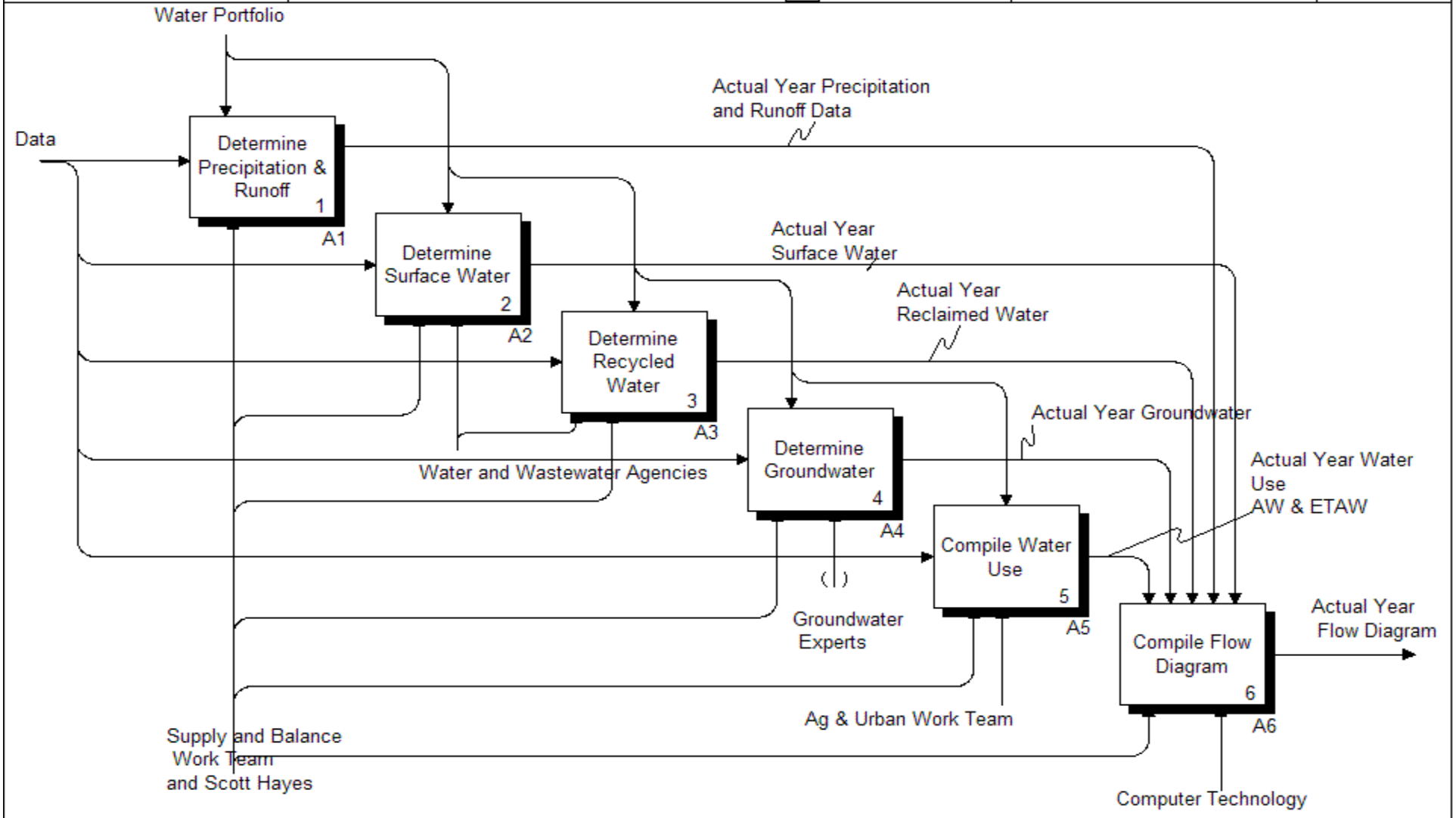
# Data Development

- The following IDEF0 diagrams describe the processes used to develop the flow diagram data
- The IDEF0 program uses a format similar to the following



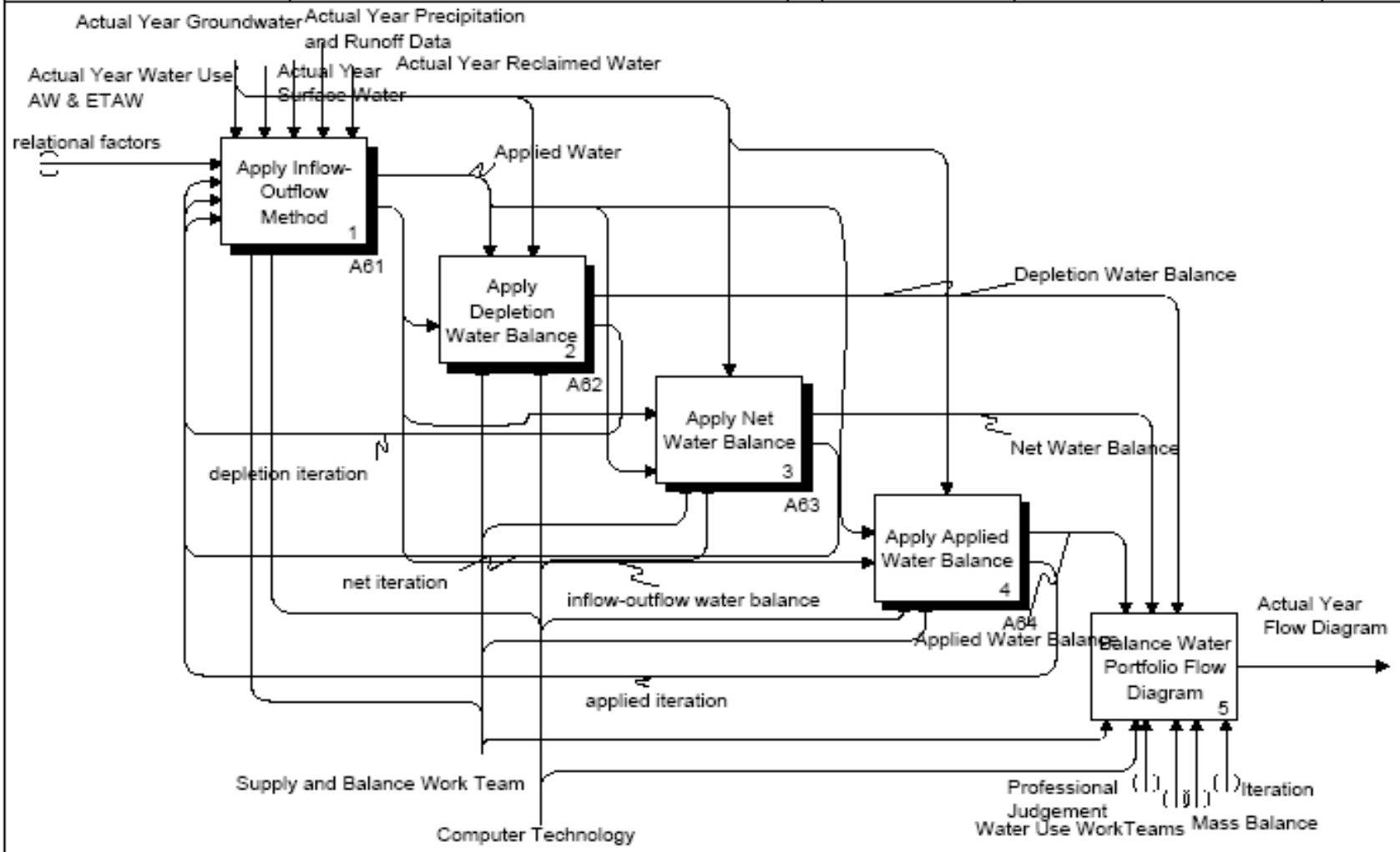



| | | | | | | |
|---|---|---|---|---|---|---|
| Used At: DWR | Author: SWPB | Date: 10/10/01 | ■ | WORKING | READER DATE | CONTEXT: |
| | Project: Flow Diagram | Rev: 10/11/02 | | DRAFT | | ■ |
| | Notes: 1 2 3 4 5 6 7 8 9 10 | | | RECOMMENDED | | |
| | | | | PUBLICATION | | A-0 |




| Node: | Title: | Number: |
|---|---|---|
| A0 | Develop Flow Diagram | Page: 2 |

| | | | | | |
|---|---|---|---|---|---|
| | Author: Tipton Date: 10/19/2001 | | WORKING | READER DATE | CONTEXT |
| | | | DRAFT | | |
| Used At: | Project: Flow Diagram Rev: 8/31/2007 | | RECOMMENDED | | |
| | Notes: 1 2 3 4 5 6 7 8 9 10 | | PUBLICATION | | A0 |




| | | |
|---|---|---|
| Node: A6 | Title: Compile Flow Diagram | Number: |
| | | Page: 46 |

# Data Sources

- Data Sources are located on the DWR web site at

\\http:\www.waterplan.water.ca.gov\technical\datasources

- Clicking on a hyperlink will provide an Excel file that looks like

Precipitation (Node A11)

| AGENCY | SOURCE | HYDROLOGIC REGION |
|---|---|---|
| DWR | Climate Cooperators Reports | Variable |
| NOAA | Climate Information Reports | Variable |
| DWR | Isohyetal Maps | Variable |
| DWR | CDEC Website | Variable |
| | Oregon State University (PRISM) model | Variable |
| NWS | National Weather Service (California Normal Stations) | Variable |
| | Urban Water Mgt. Plans | Variable |
| | Ag. Water Mgt. Plans | Variable |
| | California Irrigation Mgt. Info. Service Data | Variable |

- Another page of DWR's web site contains the specific data used in the development of the Water Plan Update 2005

http://www.waterplan.water.ca.gov/waterpie/faf_data.cfm

- On the web site, the topics are hyperlinked to allow easy access to the information

| Water Plan Data | 0 |
|---|---|
| Data is subject to revision and may not reflect what is presented in the most recent CA Water Plan Update. Please, see errata sheets for details. | |
| **General** | **(file type, size)** |
| Water Portfolio and Balance Workbook | (.xls, 16.5 MB) |
| Water Plan Information Exchange (Water PIE) | web page |
| Regional Reports | web page |
| Previous Reports | web page |
| Population | |
| (Regional populations can be found in the Regional Reports) | (.xls, 27 kb) |
| **Agricultural Water Use** | **(file type, size)** |
| Agricultural Water Use (via California Land and Water Use Portal - exits Water Plan Web Site) | Other DWR Web Site |
| **Urban Water Use** | **(file type, size)** |
| Urban Water Use (via California Land and Water Use Portal - exits Water Plan Web Site) | Other DWR Web Site |
| **Environmental Water Use** | **(file type, size)** |
| Delta Outflow | (.xls, 752 kb) |
| Evaporation from Lakes and Reservoirs - 1998, Tables and Narrative | (.xls, 49 kb), (.doc, 28 kb) |
| Evaporation from Lakes and Reservoirs - 2000, Narrative | (.doc, 27 kb) |
| Evaporation from Lakes and Reservoirs - 2001, Narrative | (.doc, 45 kb) |
| Instream Flow - 1998 | (.xls, 1.2 mb) |
| Instream Flow - 2000 | (.xls, 1.2 mb) |
| Instream Flow - 2001 | (.xls, 1.1 mb) |
| Managed Wetlands Water Use (via California Land and Water Use Portal - exits Water Plan Web Site) | Other DWR Web Site |

# Data Entry

- In Update 2005, data was entered by Planning Area for the years 1998, 2000, and 2001
- For Update 2009, data will be entered at the level of Detailed Analysis Unit by County (DAU County)
- For Update 2009, supply data has been included by sector (i.e., Local Supplies – Urban)
- Staff is converting from Applied Water method of data calculation to inflow-outflow method

Example of Data Entry Sheet

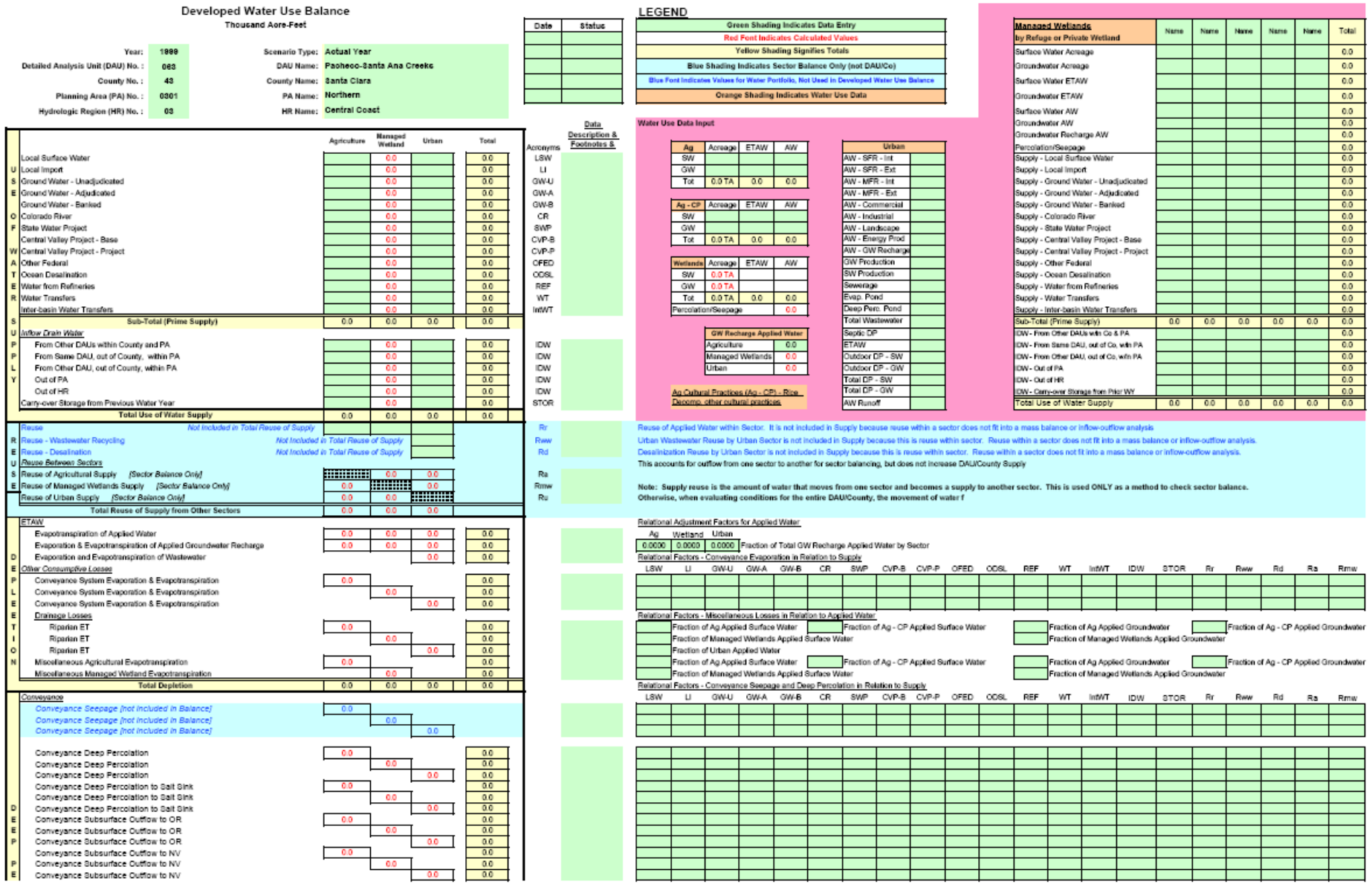
Water Use: Form 160-WU

YR: 1999

HR: Thousand Acre-Feet

| | | Central Coast - Northern (PA 301) | | | | CD Total Central Coast |
|---|---|---|---|---|---|---|
| | DAU Name: | Santa Cruz San Mateo Co | Santa Cruz Mountains | South Santa Clara Valley | Pacheco-Santa Ana Creeks | Total CD - PA |
| | DAU # | DAU 06041 | DAU 06143 | DAU 06243 | DAU 06343 | PA 301 |
| **Agriculture** | | | | | | |
| 1 | Applied Water | 1.3 | 1.1 | 33.5 | | 35.9 |
| 2 | Applied Water - Groundwater Recharge | 0.0 | 0.0 | 0.0 | | 0.0 |
| 3 | Evapotranspiration of Applied Water | 1.0 | 0.9 | 26.9 | | 28.8 |
| 4 | Evaporation and Evapotranspiration of Groundwater Recharge | 0.0 | 0.0 | 0.0 | | 0.0 |
| 5 | Deep Percolation of Applied Water | 0.0 | 0.0 | 0.0 | | 0.0 |
| 6 | Deep Percolation of Applied Water to Salt Sink | 0.0 | 0.0 | 0.0 | | 0.0 |
| 7 | Deep Percolation of Groundwater Recharge | 0.0 | 0.0 | 0.0 | | 0.0 |
| 8 | Reuse of Return Flows within DAU/County | 0.0 | 0.0 | 0.0 | | 0.0 |
| 9a | Return Flow to Oregon | 0.0 | 0.0 | 0.0 | | 0.0 |
| 9b | Return Flow to Nevada | 0.0 | 0.0 | 0.0 | | 0.0 |
| 9c | Return Flow to Mexico | 0.0 | 0.0 | 0.0 | | 0.0 |
| 9d | Deep Percolation to Oregon | 0.0 | 0.0 | 0.0 | | 0.0 |
| 9e | Deep Percolation to Nevada | 0.0 | 0.0 | 0.0 | | 0.0 |
| 9f | Deep Percolation to Mexico | 0.0 | 0.0 | 0.0 | | 0.0 |
| 10 | Return Flow to Salt Sink | 0.3 | 0.2 | 6.6 | | 7.1 |
| 11c | Return Flow to Developed Supply | 0.0 | 0.0 | 0.0 | | 0.0 |
| 12 | Return Flows Evaporation and Evapotranspiration | 0.0 | 0.0 | 0.0 | | 0.0 |
| 13 | Applied Water Use | 1.3 | 1.1 | 33.5 | 0.0 | 35.9 |
| 14 | Net Water Use (AW - Reuse) | 1.3 | 1.1 | 33.5 | 0.0 | 35.9 |
| 15 | Net Water Use (ETAW + Flow/Salt Sink + Outflow) | 1.3 | 1.1 | 33.5 | 0.0 | 35.9 |
| 16 | Depletion | 1.3 | 1.1 | 33.5 | 0.0 | 35.9 |
| 17 | Conveyance Evaporation and ETAW | 0.0 | 0.0 | 1.1 | | 1.1 |
| 18a | Conveyance Return Flow to Oregon | 0.0 | 0.0 | 0.0 | | 0.0 |
| 18b | Conveyance Return Flow to Nevada | 0.0 | 0.0 | 0.0 | | 0.0 |
| 18c | Conveyance Return Flow to Mexico | 0.0 | 0.0 | 0.0 | | 0.0 |
| 18d | Conveyance Deep Percolation to Oregon | 0.0 | 0.0 | 0.0 | | 0.0 |
| 18e | Conveyance Deep Percolation to Nevada | 0.0 | 0.0 | 0.0 | | 0.0 |
| 18f | Conveyance Deep Percolation to Mexico | 0.0 | 0.0 | 0.0 | | 0.0 |
| 19 | Conveyance Return Flows to Salt Sink | 0.0 | 0.0 | 0.0 | | 0.0 |
| 20c | Conveyance Return Flow to Developed Supply | 0.0 | 0.0 | 0.0 | | 0.0 |
| 21 | Conveyance Seepage | 0.0 | 0.0 | 0.0 | | 0.0 |
| 22 | Conveyance Deep Percolation | 0.0 | 0.0 | 0.0 | | 0.0 |
| 23 | Conveyance Deep Percolation to Salt Sink | 0.0 | 0.0 | 0.0 | | 0.0 |
| 24 | Conveyance Applied Water Use | 0.0 | 0.0 | 1.1 | 0.0 | 1.1 |
| 25 | Conveyance Net Water Use (AW - Reuse) | 0.0 | 0.0 | 1.1 | 0.0 | 1.1 |
| 26 | Conveyance Net Water Use (ETAW + Flow/Salt Sink + Outflow) | 0.0 | 0.0 | 1.1 | 0.0 | 1.1 |
| 27 | Conveyance Depletion | 0.0 | 0.0 | 1.1 | 0.0 | 1.1 |
| **Ag Effective Precipitation** | | 1.3 | | | | 1.3 |
| **Urban** | | | | | | |
| 1 | AW - Residential Use - Single Family - Interior | 0.0 | 0.1 | 2.8 | | 2.9 |
| 2 | AW - Residential Use - Single Family - Exterior | 0.0 | 0.2 | 6.4 | | 6.6 |
| 3 | AW - Residential Use - Multi-Family - Interior | 0.0 | 0.1 | 1.9 | | 2.0 |
| 4 | AW - Residential Use - Multi-Family - Exterior | 0.0 | 0.0 | 0.5 | | 0.5 |
| 5 | AW - Commercial Use | 0.0 | 0.1 | 2.9 | | 3.0 |
| 6 | AW - Industrial Use | 0.0 | 0.0 | 3.4 | | 3.4 |
| 7 | AW - Urban Large Landscape | 0.0 | 0.1 | 1.9 | | 2.0 |
| 8 | AW - Energy Production | 0.0 | 0.0 | 0.0 | | 0.0 |
| 9 | Applied Water - Groundwater recharge | 0.0 | 0.0 | 0.0 | | 0.0 |
| 10 | Evapotranspiration of Applied Water | 0.0 | 0.3 | 8.1 | | 8.4 |
| 11 | Evaporation and Evapotranspiration of Groundwater Recharge | 0.0 | 0.0 | 0.0 | | 0.0 |
| 12 | Deep Percolation of Applied Water | 0.0 | 0.0 | 1.2 | | 1.2 |
| 13 | Deep Percolation of Applied Water to Salt Sink | 0.0 | 0.0 | 0.0 | | 0.0 |
| 14 | Deep Percolation of Groundwater Recharge | 0.0 | 0.0 | 0.0 | | 0.0 |
| 15 | Reuse of Return Flows within DAU/County | 0.0 | 0.0 | 0.0 | | 0.0 |
| 16 | Evaporation and Evapotranspiration of Wastewater | 0.0 | 0.0 | 0.0 | | 0.0 |
| 17a | Return Flow to Oregon | 0.0 | 0.0 | 0.0 | | 0.0 |
| 17b | Return Flow to Nevada | 0.0 | 0.0 | 0.0 | | 0.0 |
| 17c | Return Flow to Mexico | 0.0 | 0.0 | 0.0 | | 0.0 |
| 17d | Deep Percolation to Oregon | 0.0 | 0.0 | 0.0 | | 0.0 |

An example of the standardized Data Entry Sheet – it includes all categories of water use and supply.



Developed Water Use Balance

Thousand Acre-Feet

| | | | |
|---|---|---|---|
| Year: | 1999 | Scenario Type: | Actual Year |
| Detailed Analysis Unit (DAU) No. : | 063 | DAU Name: | Pacheco-Santa Ana Creeks |
| County No. : | 43 | County Name: | Santa Clara |
| Planning Area (PA) No. : | 0301 | PA Name: | Northern |
| Hydrologic Region (HR) No. : | 03 | HR Name: | Central Coast |

| Date | Status |
|---|---|
| | |
| | |
| | |
| | |

LEGEND

- Green Shading Indicates Data Entry
- Red Font Indicates Calculated Values
- Yellow Shading Signifies Totals
- Blue Shading Indicates Sector Balance Only (not DAU/Co)
- Blue Font Indicates Values for Water Portfolio, Not Used in Developed Water Use Balance
- Orange Shading Indicates Water Use Data

| | Agriculture | Managed Wetland | Urban | Total | Acronyms | Data Description & Footnotes & |
|---|---|---|---|---|---|---|
| Local Surface Water | | 0.0 | | 0.0 | LSW | |
| U Local Import | | 0.0 | | 0.0 | LI | |
| S Ground Water - Unadjudicated | | 0.0 | | 0.0 | GW-U | |
| E Ground Water - Adjudicated | | 0.0 | | 0.0 | GW-A | |
| Ground Water - Banked | | 0.0 | | 0.0 | GW-B | |
| O Colorado River | | 0.0 | | 0.0 | CR | |
| F State Water Project | | 0.0 | | 0.0 | SWP | |
| Central Valley Project - Base | | 0.0 | | 0.0 | CVP-B | |
| W Central Valley Project - Project | | 0.0 | | 0.0 | CVP-P | |
| A Other Federal | | 0.0 | | 0.0 | OFED | |
| T Ocean Desalination | | 0.0 | | 0.0 | ODSL | |
| E Water from Refineries | | 0.0 | | 0.0 | REF | |
| R Water Transfers | | 0.0 | | 0.0 | WT | |
| Inter-basin Water Transfers | | 0.0 | | 0.0 | IntWT | |
| S Sub-Total (Prime Supply) | 0.0 | 0.0 | 0.0 | 0.0 | | |
| U *Inflow Drain Water* | | | | | | |
| P From Other DAUs within County and PA | | 0.0 | | 0.0 | IDW | |
| P From Same DAU, out of County, within PA | | 0.0 | | 0.0 | IDW | |
| L From Other DAU, out of County, within PA | | 0.0 | | 0.0 | IDW | |
| Y Out of PA | | 0.0 | | 0.0 | IDW | |
| Out of HR | | 0.0 | | 0.0 | IDW | |
| Carry-over Storage from Previous Water Year: | | 0.0 | | 0.0 | STOR | |
| Total Use of Water Supply | 0.0 | 0.0 | 0.0 | 0.0 | | |
| Reuse *Not Included in Total Reuse of Supply* | | | | | Rr | |
| R Reuse - Wastewater Recycling *Not Included in Total Reuse of Supply* | | | | | Rww | |
| E Reuse - Desalination *Not Included in Total Reuse of Supply* | | | | | Rd | |
| U *Reuse Between Sectors* | | | | | | |
| S Reuse of Agricultural Supply *[Sector Balance Only]* | | 0.0 | 0.0 | | Ra | |
| E Reuse of Managed Wetlands Supply *[Sector Balance Only]* | 0.0 | | 0.0 | | Rmw | |
| Reuse of Urban Supply *[Sector Balance Only]* | 0.0 | 0.0 | | | Ru | |
| Total Reuse of Supply from Other Sectors | 0.0 | 0.0 | 0.0 | | | |
| ETAW | | | | | | |
| Evapotranspiration of Applied Water | 0.0 | 0.0 | 0.0 | 0.0 | | |
| Evaporation & Evapotranspiration of Applied Groundwater Recharge | 0.0 | 0.0 | 0.0 | 0.0 | | |
| D Evaporation and Evapotranspiration of Wastewater | | | 0.0 | 0.0 | | |
| E *Other Consumptive Losses* | | | | | | |
| P Conveyance System Evaporation & Evapotranspiration | 0.0 | | | 0.0 | | |
| L Conveyance System Evaporation & Evapotranspiration | | 0.0 | | 0.0 | | |
| E Conveyance System Evaporation & Evapotranspiration | | | 0.0 | 0.0 | | |
| E Drainage Losses | | | | | | |
| T Riparian ET | 0.0 | | | 0.0 | | |
| I Riparian ET | | 0.0 | | 0.0 | | |
| O Riparian ET | | | 0.0 | 0.0 | | |
| N Miscellaneous Agricultural Evapotranspiration | 0.0 | | | 0.0 | | |
| Miscellaneous Managed Wetland Evapotranspiration | | 0.0 | | 0.0 | | |
| Total Depletion | 0.0 | 0.0 | 0.0 | 0.0 | | |
| Conveyance | | | | | | |
| *Conveyance Seepage [not included in Balance]* | 0.0 | | | | | |
| *Conveyance Seepage [not included in Balance]* | | 0.0 | | | | |
| *Conveyance Seepage [not included in Balance]* | | | 0.0 | | | |
| Conveyance Deep Percolation | 0.0 | | | 0.0 | | |
| Conveyance Deep Percolation | | 0.0 | | 0.0 | | |
| Conveyance Deep Percolation | | | 0.0 | 0.0 | | |
| Conveyance Deep Percolation to Salt Sink | 0.0 | | | 0.0 | | |
| Conveyance Deep Percolation to Salt Sink | | 0.0 | | 0.0 | | |
| D Conveyance Deep Percolation to Salt Sink | | | 0.0 | 0.0 | | |
| E Conveyance Subsurface Outflow to OR | 0.0 | | | 0.0 | | |
| E Conveyance Subsurface Outflow to OR | | 0.0 | | 0.0 | | |
| P Conveyance Subsurface Outflow to OR | | | 0.0 | 0.0 | | |
| Conveyance Subsurface Outflow to NV | 0.0 | | | 0.0 | | |
| P Conveyance Subsurface Outflow to NV | | 0.0 | | 0.0 | | |
| E Conveyance Subsurface Outflow to NV | | | 0.0 | 0.0 | | |

Water Use Data Input

| Ag | Acreage | ETAW | AW |
|---|---|---|---|
| SW | | | |
| GW | | | |
| Tot | 0.0 TA | 0.0 | 0.0 |

| Ag - CP | Acreage | ETAW | AW |
|---|---|---|---|
| SW | | | |
| GW | | | |
| Tot | 0.0 TA | 0.0 | 0.0 |

| Wetlands | Acreage | ETAW | AW |
|---|---|---|---|
| SW | 0.0 TA | | |
| GW | 0.0 TA | | |
| Tot | 0.0 TA | 0.0 | 0.0 |
| Percolation/Seepage | | | 0.0 |

| GW Recharge Applied Water | |
|---|---|
| Agriculture | 0.0 |
| Managed Wetlands | 0.0 |
| Urban | 0.0 |

Ag Cultural Practices (Ag - CP) - Rice, Decomp, other cultural practices

| Urban | |
|---|---|
| AW - SFR - Int | |
| AW - SFR - Ext | |
| AW - MFR - Int | |
| AW - MFR - Ext | |
| AW - Commercial | |
| AW - Industrial | |
| AW - Landscape | |
| AW - Energy Prod | |
| AW - GW Recharge | |
| GW Production | |
| SW Production | |
| Sewerage | |
| Evap. Pond | |
| Deep Perc. Pond | |
| Total Wastewater | |
| Septic DP | |
| ETAW | |
| Outdoor DP - SW | |
| Outdoor DP - GW | |
| Total DP - SW | |
| Total DP - GW | |
| AW Runoff | |

| Managed Wetlands by Refuge or Private Wetland | Name | Name | Name | Name | Name | Total |
|---|---|---|---|---|---|---|
| Surface Water Acreage | | | | | | 0.0 |
| Groundwater Acreage | | | | | | 0.0 |
| Surface Water ETAW | | | | | | 0.0 |
| Groundwater ETAW | | | | | | 0.0 |
| Surface Water AW | | | | | | 0.0 |
| Groundwater AW | | | | | | 0.0 |
| Groundwater Recharge AW | | | | | | 0.0 |
| Percolation/Seepage | | | | | | 0.0 |
| Supply - Local Surface Water | | | | | | 0.0 |
| Supply - Local Import | | | | | | 0.0 |
| Supply - Ground Water - Unadjudicated | | | | | | 0.0 |
| Supply - Ground Water - Adjudicated | | | | | | 0.0 |
| Supply - Ground Water - Banked | | | | | | 0.0 |
| Supply - Colorado River | | | | | | 0.0 |
| Supply - State Water Project | | | | | | 0.0 |
| Supply - Central Valley Project - Base | | | | | | 0.0 |
| Supply - Central Valley Project - Project | | | | | | 0.0 |
| Supply - Other Federal | | | | | | 0.0 |
| Supply - Ocean Desalination | | | | | | 0.0 |
| Supply - Water from Refineries | | | | | | 0.0 |
| Supply - Water Transfers | | | | | | 0.0 |
| Supply - Inter-basin Water Transfers | | | | | | 0.0 |
| Sub-Total (Prime Supply) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| IDW - From Other DAUs with Co & PA | | | | | | 0.0 |
| IDW - From Same DAU, out of Co, with PA | | | | | | 0.0 |
| IDW - From Other DAU, out of Co, with PA | | | | | | 0.0 |
| IDW - Out of PA | | | | | | 0.0 |
| IDW - Out of HR | | | | | | 0.0 |
| IDW - Carry-over Storage from Prior WY | | | | | | 0.0 |
| Total Use of Water Supply | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Reuse of Applied Water within Sector. It is not included in Supply because reuse within a sector does not fit into a mass balance or inflow-outflow analysis

Urban Wastewater Reuse by Urban Sector is not included in Supply because this is reuse within sector. Reuse within a sector does not fit into a mass balance or inflow-outflow analysis.

Desalinization Reuse by Urban Sector is not included in Supply because this is reuse within sector. Reuse within a sector does not fit into a mass balance or inflow-outflow analysis.

This accounts for outflow from one sector to another for sector balancing, but does not increase DAU/County Supply

**Note: Supply reuse is the amount of water that moves from one sector and becomes a supply to another sector. This is used ONLY as a method to check sector balance. Otherwise, when evaluating conditions for the entire DAU/County, the movement of water f**

Relational Adjustment Factors for Applied Water

| Ag | Wetland | Urban | |
|---|---|---|---|
| 0.0000 | 0.0000 | 0.0000 | Fraction of Total GW Recharge Applied Water by Sector |

Relational Factors - Conveyance Evaporation in Relation to Supply

| LSW | LI | GW-U | GW-A | GW-B | CR | SWP | CVP-B | CVP-P | OFED | ODSL | REF | WT | IntWT | IDW | STOR | Rr | Rww | Rd | Ra | Rmw |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

Relational Factors - Miscellaneous Losses in Relation to Applied Water

- Fraction of Ag Applied Surface Water ____ Fraction of Ag - CP Applied Surface Water
- Fraction of Managed Wetlands Applied Surface Water
- Fraction of Urban Applied Water
- Fraction of Ag Applied Surface Water ____ Fraction of Ag - CP Applied Surface Water
- Fraction of Managed Wetlands Applied Surface Water

- Fraction of Ag Applied Groundwater ____ Fraction of Ag - CP Applied Groundwater
- Fraction of Managed Wetlands Applied Groundwater
- Fraction of Ag Applied Groundwater ____ Fraction of Ag - CP Applied Groundwater
- Fraction of Managed Wetlands Applied Groundwater

Relational Factors - Conveyance Seepage and Deep Percolation in Relation to Supply

| LSW | LI | GW-U | GW-A | GW-B | CR | SWP | CVP-B | CVP-P | OFED | ODSL | REF | WT | IntWT | IDW | STOR | Rr | Rww | Rd | Ra | Rmw |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

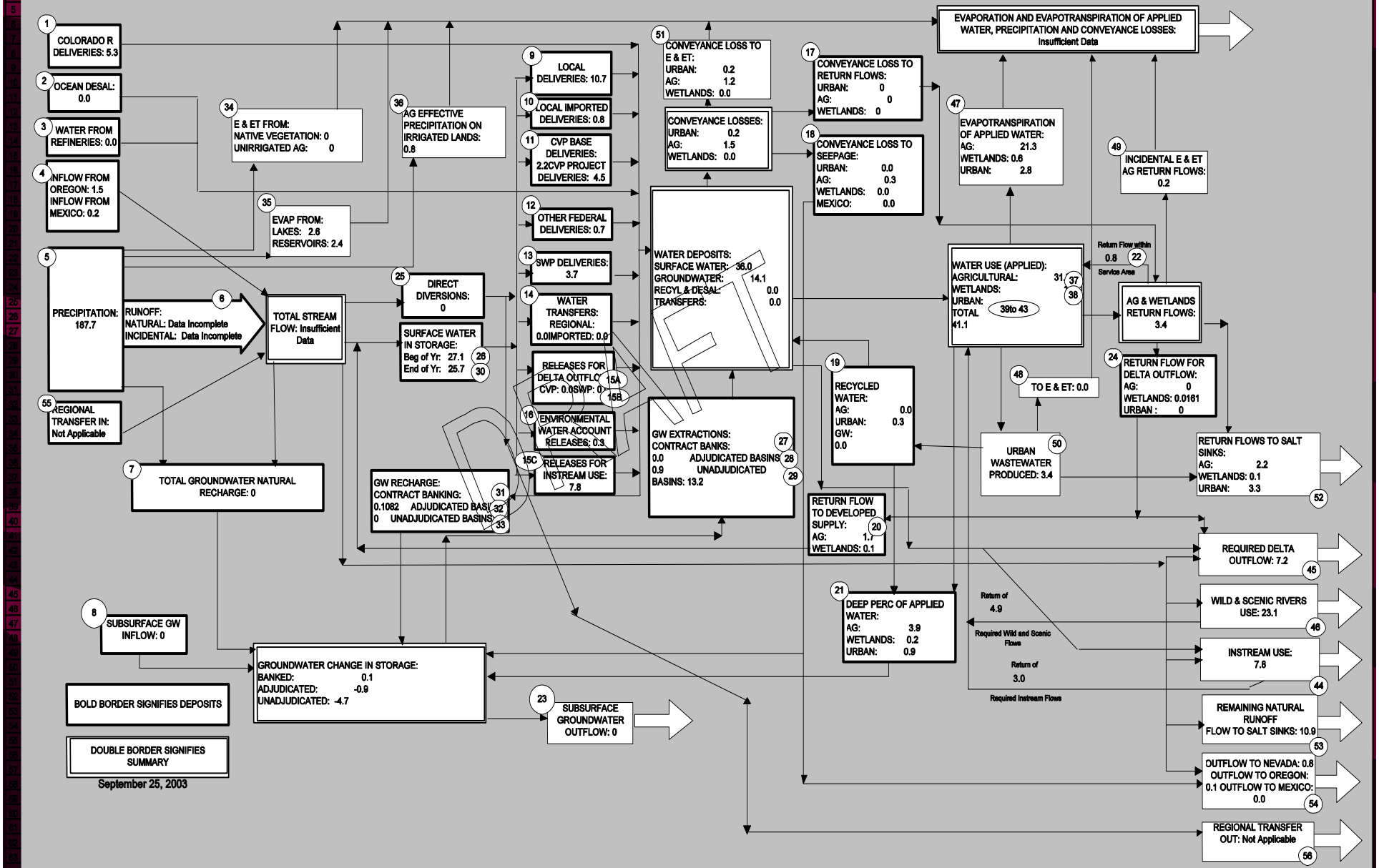
# An example of the Inflow-Outflow method of Data Entry

# Flow Diagram/Water Portfolio

- One Flow Diagram per Hydrologic Region
- Includes Inputs and Withdrawals from Region
- Includes all categories of water
- Once the database (currently being developed) is complete, staff will be able to query the flow diagram data for smaller areas

# STATEWIDE - 2000 FLOW DIAGRAM

IN MILLION ACRE-FEET (MAF)



| | | North Coast 1998 (TAF) | | | | North Coast | |
|---|---|---|---|---|---|---|---|
| Category | Description | Water | Applied | Net | Depletion | Water | Applied |
| **Inputs:** | | Portfolio | Water | Water | | Portfolio | Water |
| 1 | Colorado River Deliveries | | - | | | | - |
| 2 | Ocean Desalination | | - | | | | - |
| 3 | Water from Refineries | | - | | | | - |
| 4a | Inflow From Oregon | | 2,030.0 | | | | 1,497.9 |
| b | Inflow From Mexico | | - | | | | - |
| 5 | Precipitation | 79,659.7 | | | | 51,177.0 | |
| 6a | Runoff - Natural | 53,812.0 | | | | N/A | |
| b | Runoff - Incidental | N/A | | | | N/A | |
| 7 | Total Groundwater Natural Recharge | N/A | | | | N/A | |
| 8 | Groundwater Subsurface Inflow | N/A | | | | N/A | |
| 9 | Local Deliveries | | 375.1 | | | | 381.9 |
| 10 | Local Imported Deliveries | | 2.0 | | | | 2.0 |
| 11a | CVP Deliveries - Base | | - | | | | - |
| b | CVP Deliveries - Project | | - | | | | - |
| 12 | Other Federal Deliveries | | 334.5 | | | | 408.7 |
| 13 | SWP Deliveries | | 0.0 | | | | 0.0 |
| 14a | Water Transfers - Regional | | 0.0 | | | | 0.0 |
| b | Water Transfers - Imported | | 0.0 | | | | 0.0 |
| 15a | Releases for Delta Outflow - CVP | | - | | | | - |
| b | Releases for Delta Outflow - SWP | | - | | | | - |
| c | Releases for Instream Use | | 1,585.1 | | | | 1,553.3 |
| 16 | Environmental Water Account Releases | | N/A | | | | N/A |
| 17a | Conveyance Loss to Return Flows - Urban | | 0.0 | | | | 0.0 |
| b | Conveyance Loss to Return Flows - Ag | | 0.0 | | | | 0.0 |
| c | Conveyance Loss to Return Flows - Wetlands | | 0.0 | | | | 0.0 |
| 18a | Conveyance Loss to Seepage - Urban | | 0.0 | | | | 0.0 |
| b | Conveyance Loss to Seepage - Ag | | 5.1 | | | | 6.4 |
| c | Conveyance Loss to Seepage - Wetlands | | 0.0 | | | | 0.0 |
| 19a | Recycled Water - Agriculture | | 11.7 | | | | 4.9 |
| b | Recycled Water - Urban | | 0.3 | | | | 0.3 |
| c | Recycled Water - Groundwater | | 0.0 | | | | 0.0 |
| 20a | Return Flow to Developed Supply - Ag | | 12.5 | | | | 0.0 |
| b | Return Flow to Developed Supply - Wetlands | | 0.0 | | | | 0.0 |
| 21a | Deep Percolation of Applied Water - Ag | | 53.3 | | | | 60.6 |
| b | Deep Percolation of Applied Water - Wetlands | | 1.1 | | | | 1.6 |
| c | Deep Percolation of Applied Water - Urban | | 14.6 | | | | 18.0 |
| 22a | Return Flow within Service Area - Ag | | 34.9 | | | | 25.7 |
| b | Return Flow within Service Area - Wetlands | | 166.2 | | | | 168.6 |
| 24a | Return Flow for Delta Outflow - Ag | | 0.0 | | | | 0.0 |
| b | Return Flow for Delta Outflow - Wetlands | | 0.0 | | | | 0.0 |
| c | Return Flow for Delta Outflow - Urban | | 0.0 | | | | 0.0 |
| 25 | Direct Diversions | N/A | | | | N/A | |
| 26 | Surface Water in Storage - Beg of Yr | 2,236.3 | | | | 2,740.7 | |
| 27 | Groundwater Extractions - Banked | - | | | | - | |
| 28 | Groundwater Extractions - Adjudicated | - | | | | - | |

Example of Flow Diagram Table Format

Detailed sheets are included on the web in Update 2005

# Water Balances

- Includes water supplies to meet defined use categories
- Compare to Water Supplies:
  - Agricultural Water Use
  - Urban Water Use
  - Managed Wetlands Water Use
  - Wild and Scenic Rivers Water Use
  - Instream Flow Requirement Water Use
  - Required Delta Outflow/Excess Delta Outflow

| DEVELOPED WATER SUPPLY - WATER USE BALANCES | | | | | | | |
|---|---|---|---|---|---|---|---|
| NORTH COAST | | | | | | | |
| | 1998 | | | 2000 | | | |
| WATER USE | Applied Water | Net Water | Depletion | Applied Water | Net Water | Depletion |
| **Urban** | | | | | | | |
| Urban Large Landscape | 5.1 | | | 4.9 | | |
| Urban Commercial Use | 23.2 | | | 24.1 | | |
| Urban Industrial Use | 28.2 | | | 29.5 | | |
| Urban Energy Production | 0.0 | | | 0.0 | | |
| Urban Residential Use - Interior | 53.3 | | | 58.0 | | |
| Urban Residential Use - Exterior | 20.3 | | | 19.4 | | |
| ETAW | | 22.1 | 22.1 | | 22.0 | 22.0 |
| Irrecoverable Losses | | 2.9 | 2.9 | | 3.1 | 3.1 |
| Outflow | | 86.7 | 86.7 | | 66.5 | 66.5 |
| CL Applied Water | 0.0 | | | 0.0 | | |
| CL Evap | | 0.0 | 0.0 | | 0.0 | 0.0 |
| CL Irrecoverable Losses | | 0.0 | 0.0 | | 0.0 | 0.0 |
| CL Outflow | | 0.0 | 0.0 | | 0.0 | 0.0 |
| GW Recharge AW | 0.0 | | | 0.0 | | |
| GW Recharge E+ET | | 0.0 | 0.0 | | 0.0 | 0.0 |
| **Total Urban** | 130.1 | 111.7 | 111.7 | 135.9 | 91.6 | 91.6 |
| | | | | | | |
| **Agriculture** | | | | | | | |
| Applied Water | 633.1 | | | 753.2 | | |
| ETAW | | 449.8 | 449.8 | | 541.0 | 541.0 |
| Irrecoverable Losses | | 25.5 | 25.5 | | 28.3 | 28.3 |
| Outflow | | 69.6 | 57.1 | | 97.6 | 97.6 |
| CL Applied Water | 22.6 | | | 27.3 | | |
| CL Evap | | 5.7 | 5.7 | | 6.7 | 6.7 |
| CL Irrecoverable Losses | | 0.0 | 0.0 | | 0.0 | 0.0 |
| CL Outflow | | 2.0 | 2.0 | | 2.0 | 2.0 |
| GW Recharge AW | 0.0 | | | 0.0 | | |
| GW Recharge E+ET | | 0.0 | 0.0 | | 0.0 | 0.0 |
| **Total Agriculture** | 655.7 | 552.6 | 540.1 | 780.5 | 675.6 | 675.6 |
| | | | | | | |
| **Environmental** | | | | | | | |
| Instream | | | | | | | |
| Applied Water | 1,585.1 | | | 1,553.3 | | |
| Outflow | | 1,550.7 | 1,550.7 | | 1,521.9 | 1,521.9 |
| Total | 1,585.1 | 1,550.7 | 1,550.7 | 1,553.3 | 1,521.9 | 1,521.9 |
| Wild & Scenic | | | | | | | |
| Applied Water | 33,290.1 | | | 17,321.1 | | |
| Outflow | | 33,290.1 | 33,290.1 | | 17,321.1 | 17,321.1 |
| Total | 33,290.1 | 33,290.1 | 33,290.1 | 17,321.1 | 17,321.1 | 17,321.1 |
| Refuge | | | | | | | |
| Applied Water | 401.1 | | | 425.8 | | |
| ETAW | | 166.4 | 166.4 | | 195.4 | 195.4 |

# Example of Water Balances Sheet

# Water Balance Sheet

- Include Applied, Net and Depletion Water Balances
- Includes Actual Data by DAU County and Planning Area for State and Regions.
- Continuation of method that was used for Ca Water Plan Update 2005
- Does not compare with 160-98 balances that used normalized data

# Water Portfolio in Update 2009

- 1999, 2002, 2003, 2004, 2005 and possibly 2006 actual data
- Balance sheets for
  - All Planning Areas in the State by Region
  - Ten Hydrologic Regions & Mountain Counties
  - Statewide
- Flow Diagram/Table Format for
  - Ten Hydrologic Regions & Mountain Counties
  - Statewide
- Presented in Regional Reports

# Water Portfolio in Update 2009

- Update 2005 data available on website

http://www.waterplan.water.ca.gov/waterpie/faf_data.cfm

- Complete IDEF0 Flow Charts are available at

http://www.waterplan.water.ca.gov/technical/processmaps/index.cfm

- The Water Portfolio data sources are available at

http://www.waterplan.water.ca.gov/technical/datasources/

# Long-term Improvements

- Developing a database for the portfolio information
- Evaluating reducing the inflow-outflow evaluation area size to water districts or smaller areas

# For More Information

Contact staff at the Department of Water Resources

http://www.waterplan.water.ca.gov/comments/index.cfm

Or me

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